

Experimental Extreme Cold Warning Products

Product Description Document (PDD)

Part 1 – Mission Connection

1. Product / Service Description:

The National Weather Service's (NWS) core mission is to provide accurate and timely hazardous weather information for the protection of life and property. Currently, NWS Weather Forecast Offices (WFOs) produce Wind Chill Advisories, Watches, and Warnings based on the Wind Chill Index which only protects life (WCI, updated in 2001, <http://www.weather.gov/om/windchill/>). WCI is defined for a combination of ambient temperatures at or below 40 F and wind speeds greater than or equal to 3 mph that can lead to dangerous hypothermia and/or frostbite conditions. However, in some circumstances, extreme cold ambient temperatures with little or no wind (under 3 mph) can produce dangerous conditions or damage property. NWS Alaska Region has for several years used an Extreme Cold (EC) Warning for events that mainly impacted aviation, including congealed and frozen fuels and hydraulic lines. This experiment will focus on its use in public warnings.

This season (Jan 18 -Apr 15, 2012), the EC product will be issued for cold temperature criteria that is met by apparent temperatures for both wind and non-wind conditions. The product is under the Non Precipitation Weather (NPW) category.

Extreme Cold Warning Issuance: On occasion, winter temperatures may fall to extreme cold readings with no wind occurring. Currently, the only way to headline very cold temperatures is with the use of Wind Chill Advisory or Warning products. In the rare situations where actual temperatures reach Wind Chill Warning criteria with little or no wind, WFOs may issue an EC Warning.

For this year's experiment, the criteria that have been agreed upon for a majority of the offices include the range of -30 to -35 degrees Fahrenheit. Within this range the EC product should be issued at forecaster discretion, provided that several zones will be affected for several hours. For temperatures colder than -35 the EC product will be issued.

For the Duluth, MN (DLH) office, the EC product issuance will be triggered at -40 degrees F., for temperatures warmer than this (-25 to -39) the office will use an Special Weather Statement (SPS) to advertise the cold.

The EC warning criterion for Little Rock, AR (LZK) is for ambient temperatures around 0 degrees F or lower. LZK will still issue Wind Chill Warnings and Advisories under the WSW header.

Collaboration with surrounding offices should be a key component in the issuance of this product.

2. Purpose/Intended Use:

The EC warning is intended to fill a gap by providing critical winter information for public health / safety and property damage by using existing AWIPS software and dissemination tools.

3. Audience:

This service is intended to provide critical winter weather information to a wide range of decision makers including emergency managers, school superintendents, building managers, and the general public.

4. Presentation Format:

The EC Warning products are generated within AWIPS Graphical Hazards Generator (GHG) as a Non Precipitation Warning (NPW) Product and utilize an existing Valid Time Event Code (VTEC) phenomenon (EC.W). There is no EC Advisory product in VTEC. The products will be in the standard format of GHG long duration products as shown in NWS Instruction 10-515 (<http://www.nws.noaa.gov/directives/sym/pd01005015curr.pdf>).

Since we will be issuing the EC for apparent temperatures, regardless of wind conditions, the reason for the issuance should be clarified within the product, with explanatory comments included in the first paragraph and/or bullet items. For example:

No/light wind conditions...

a) The NWS in (office) has issued an Extreme Cold Warning for light wind and very cold temperatures in effect from xx til xx.

- *Winds are expected to be calm by midnight allowing...

- *Temperature values of 30 to 35 below zero are expected...

Windy conditions...

a) The NWS in (office) has issued an Extreme Cold Warning for the combination of moderate winds and very cold temperature in effect from xx til xx.

- *Winds will remain at 10 to 15 mph through...

- *Temperature values of 25 to 30 below zero are expected...

- *Wind Chill Temperatures may approach 55 below at times...

b) The NWS in (office) has issued an Extreme Cold Warning for dangerous wind chills in effect from xx til xx.

5. Feedback Method:

Feedback will be available via a web e-mail link at <http://www.weather.gov/survey/nws-survey.php?code=ecw>. A formal evaluation and comment period is set for January 18, 2012 - April 15, 2012.

Technical or general comments for the EC warning product may be addressed to:

National Weather Service

Attn: Jim Keeney

7220 NW 101st Terrace Building:

Routing Code: W/CR1

Kansas City, MO 64153-2371

Jim.Keeney@noaa.gov

or,

National Weather Service

Attn: Paul Stokols

Office of Climate, Water and Weather Services

1325 East West Highway

Silver Spring, MD 20910

Paul.Stokols@noaa.gov

Part 2 – Technical

1. Format and Science Basis:

The EC will be created and formatted within AWIPS GHG as a Non Precipitation Weather (NPW) product. The EC product will utilize existing VTEC code (EC.W) for dissemination purposes.

2. Additional Information:

(a) Examples:

WWUS73 KDLH 202124

NPWDLH

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE DULUTH MN

324 PM CST THU JAN 20 2011

MNZ010-011-018-019-026-211030-

/O.NEW.KDLH.EC.W.0001.110120T2200Z-110121T1600Z/

KOOCHICHING-NORTHERN ST. LOUIS-NORTHERN ITASCA-CENTRAL ST.

LOUIS-

SOUTHERN ITASCA-

INCLUDING THE CITIES OF...INTERNATIONAL FALLS...ELY...BIGFORK...

HIBBING...GRAND RAPIDS

324 PM CST THU JAN 20 2011

...EXTREME COLD WARNING IN EFFECT UNTIL 10 AM CST FRIDAY...

THE NATIONAL WEATHER SERVICE IN DULUTH HAS ISSUED AN EXTREME COLD WARNING FOR LIGHT WIND AND VERY COLD TEMPERATURES...WHICH IS IN EFFECT UNTIL 10 AM CST FRIDAY.

* TEMPERATURE: TEMPERATURES ARE EXPECTED TO DROP TO AROUND 40 BELOW ACROSS NORTHERN MINNESOTA OVERNIGHT AND THEN GRADUALLY IMPROVE FRIDAY MORNING. WINDS ARE EXPECTED TO BECOME CALM OVERNIGHT.

* FROSTBITE TIMES: FROSTBITE AFFECTS EXPOSED SKIN OF A HEALTHY ADULT IN 10 TO 20 MINUTES. THE ELDERLY AND YOUNG CHILDREN ARE ESPECIALLY SUSCEPTIBLE TO THE COLD.

* IMPACTS: FROSTBITE CAN LEAD TO HYPOTHERMIA IF PRECAUTIONS ARE NOT TAKEN. PETS AND LIVESTOCK ARE ALSO AFFECTED BY COLD TEMPERATURES.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

AN EXTREME COLD WARNING MEANS DANGEROUS AND POTENTIALLY LIFE-THREATENING EXTREME COLD TEMPERATURES ARE EXPECTED FOR A PROLONGED PERIOD OF TIME. FROSTBITE AND HYPOTHERMIA ARE LIKELY IN AS SHORT AS 10 TO 20 MINUTES IF YOU ARE EXPOSED TO THESE CONDITIONS WITHOUT PROPER PROTECTION. MAKE SURE YOU DRESS WITH SEVERAL LAYERS OF CLOTHES DESIGNED FOR EXTREME COLD CONDITIONS...AND AVOID SWEATING IF YOU ARE OUTDOORS AS THIS CAN LEAD TO A FASTER ONSET OF HYPOTHERMIA.

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DAP

(b) Participants

Rapid City, SD

Aberdeen, SD

Sioux Falls, SD

Bismarck, ND

Eastern North Dakota

Minneapolis, MN

Duluth, MN

Little Rock, AR

